1. The area under a force-position graph is 2 J. The object upon which the forces were applied began at rest and reached a top speed of 4 m/s. What is the mass of the object in kg?
2. Two carts are free to move along a straight frictionless track. Cart A has three times the mass of cart B and is moving at a velocity of 8 m/s before colliding and sticking to cart B which was initially at rest. What is cart A's final velocity?
3. A rolling cannon with a loaded cannon ball comprise a system are are moving to the right with a constant velocity 'v'. The rolling cannon has mass '8m' and the cannon ball has mass 'm'. The ball is shot to the left. What will be the velocity of the center of mass of the system after the ball is shot?
4. The center of mass of a system is the point at which the system will _____ and will not change its velocity unless acted upon by an external non-zero net force.
   a.Balance b. Accelerate c.Explode d.Collide e. none of the above
5. True or False: A system's angular momentum will not change unless external non-zero net torque acts upon the system.
6. If an ice skater opens her arms during a spin, her moment of inertia will _____ and her angular velocity will _____. Assume no external torques on the ice skater.
7. Box A is sitting on top of box B in an elevator. The elevator begins to accelerate downward. The force magnitude of Box A on Box B is _____ when compared to the force of Box B on Box A. a.) greater b.)lesser c.) equal d.)impossible to determine
8. Box A is sitting on top of box B in an elevator. The elevator is now moving at a constant speed. The net force on Box A is _____.
   a. pointed up b. pointed down c.zero d. impossible to determine
9. Draw a force diagram for the top box B from #8.
10. A spring is compressed a certain distance on a frictionless surface with a force of 15 N. An object of mass 'm' is placed on the spring and is accelerated to a top speed. Later, the spring is compressed again by a force of 15 N, but now a mass of '5m' is placed on the spring and is allowed to accelerate to a top speed. By what factor is the kinetic energy of the 5m mass reduced compared to the 1m?
11. True or False. Force gravity is not a conservative force.
12. Mechanical energy consists of which of the following form(s) of energy?
    a.Kinetic b. gravitational potential c. heat d. elastic potential e. chemical potential
13. True or False. Centripetal force is a net force.
14. True or False. A force applied at 90 degrees from the direction of displacement can do no work.
15. True or False. Force friction on an incline is equal to mu*mg*sin(angle of the incline)
16. The work-energy theorem states that work is equal to _____.
    a.Change in Kinetic Energy b. Change in Gravitational Potential Energy c. a & b
17. The acceleration for a projectile traveling upward on earth is ____. A.g B. .5g C. 10g D.Zero
18. The acceleration for a projectile falling downward on earth is ____. A.g B. .5g C. 10g D.Zero
19. True or False. If the maximum static friction of an object at rest is not exceeded by an applied force, the object will not accelerate.
20. True or False. Average velocity is equal to (Final Velocity – Initial Velocity)/2